

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

MAX BLU TECHNOLOGIES, LLC,

Plaintiff,

v.

CINEDIGM CORP.,

Defendant.

§
§
§
§
§
§
§
§
§

Case No. 2:15-cv-1369-JRG

MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of Max Blu Technologies, LLC (“Plaintiff”) (Dkt. No. 88, filed on May 17, 2016),¹ the response of Cinedigm Corp. (“Defendant”) (Dkt. No. 93, filed on June 2, 2016), and the reply of Plaintiff (Dkt. No. 93, filed on June 10, 2016). The Court held a claim construction hearing on June 28, 2016. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

¹ Citations to the parties’ filings are to the filing’s number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

Table of Contents

I.	BACKGROUND	3
II.	LEGAL PRINCIPLES	9
A.	Claim Construction	9
B.	Departing from the Ordinary Meaning of a Claim Term.....	12
C.	Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)	13
D.	Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)	15
III.	PERSON OF ORDINARY SKILL IN THE ART	16
IV.	AGREED CONSTRUCTIONS.....	17
V.	CONSTRUCTION OF DISPUTED TERMS.....	19
A.	“a replica disk made from a replication process that includes creation of a master disk, creation of a first-generation stamper from the master disk and creation of a second-generation stamper from the first generation stamper”	19
B.	“master disk”	24
C.	“surface relief pattern” and “surface pattern”	27
D.	“lands”	30
E.	“land tops,” “wherein the lands have tops,” and “tops of the lands”	34
F.	“grooves,” “interrupted grooves,” and “pits”	37
G.	“pit depth”	45
H.	“track pitch”	47
I.	“wherein the tops of the lands are substantially flat and coplanar”	50
J.	“generally flat and coplanar”	54
K.	“less than approximately”	55
VI.	CONCLUSION	58

I. BACKGROUND

Plaintiff alleges infringement of five related patents: U.S. Patents Nos. 7,352,685 (the “’685 Patent”), No. 7,801,016 (the “’016 Patent”), No. 8,593,931 (the “’931 Patent”), No. RE44,633 (the “’633 Patent”), and No. 8,705,334 (the “’334 Patent”) (collectively, the “Asserted Patents”). The ’685 Patent is entitled “Reverse Optical Mastering For Data Storage Disk Replicas.” The application leading to the ’685 Patent was filed on March 2, 2004, and the patent issued on April 1, 2008. The ’016 Patent is entitled “Reverse Optical Mastering For Data Storage Disk Replicas.” The application leading to the ’016 Patent was filed on September 4, 2009, and the patent issued on September 21, 2010. The ’931 Patent is entitled “Replica Disk For Data Storage.” The application leading to the ’931 Patent was filed on December 28, 2012, and the patent issued on November 26, 2013. The ’633 Patent is entitled “Reverse Optical Mastering For Data Storage Disk Replicas.” The ’633 Patent is a reissue of U.S. Patent No. 7,952,986, filed August 6, 2010, and the ’633 Patent issued on December 10, 2013. The ’334 Patent is entitled “Replica Disk For Data Storage.” The application leading to the ’334 Patent was filed on October 28, 2013, and the patent issued on April 22, 2014. The Asserted Patents are part of a large family of patents and share a common specification except for the claim sets. The patents each claim priority to an application filed on April 6, 1998.

In general, the Asserted Patents are directed to technology for optical data-storage disks, such as audio CDs, CD-ROMs, DVDs, and recordable optical disks. ’685 Patent col.1 ll.15–19, col.36–51. More particularly, the patents are directed to disks having particular geometric characteristics.

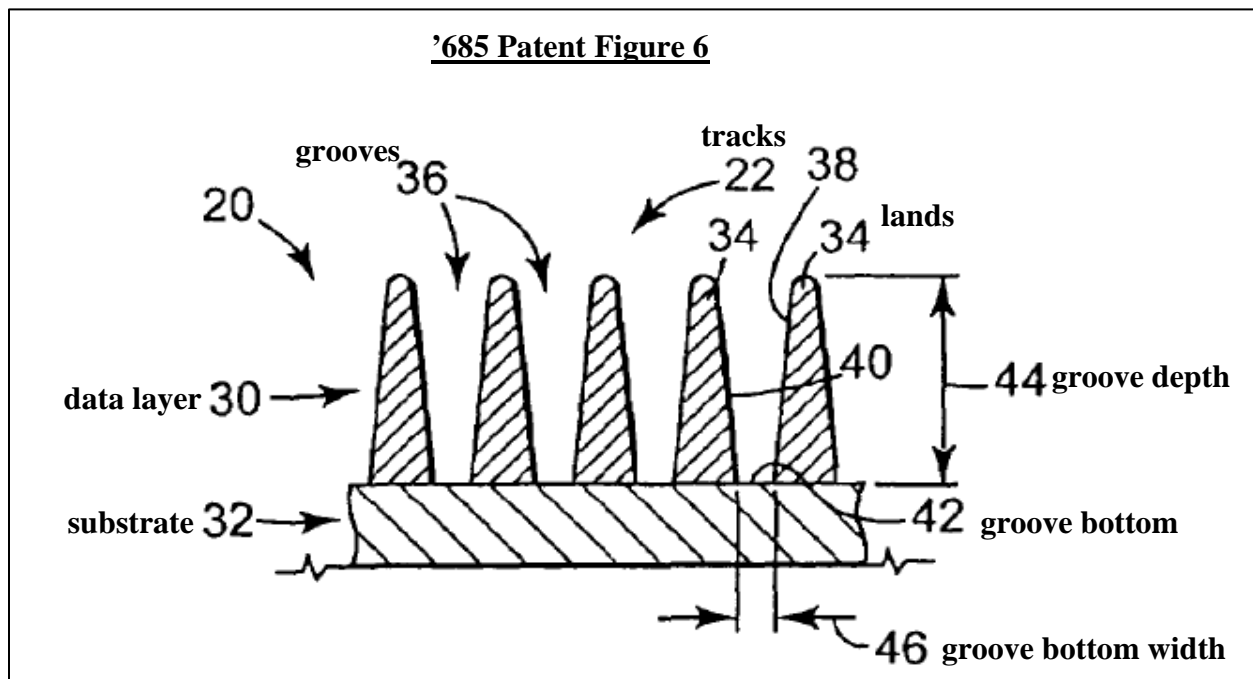
The patents teach that optical disks are produced from a master disk. A stamper is used to stamp a three-dimensional geometric pattern into the surface of a disk to create a replica disk,

and this pattern is the replica disk's surface relief pattern. *Id.* at col.1 ll.23–30. The stamper, and its surface relief pattern, is created from a master disk which also has a surface relief pattern. *Id.* In this way, the surface relief pattern of the master disk is transferred to the replica disks. *Id.*

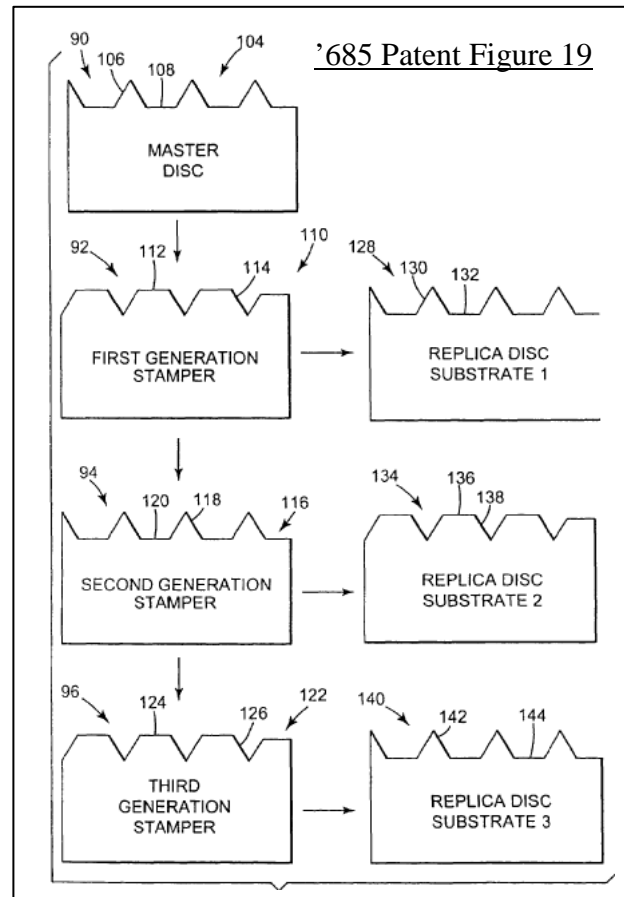
The surface relief pattern on the master disk is created by using a laser to selectively expose areas on a surface of the master disk. The surface is a photosensitive material deposited on a substrate, such as glass. The photosensitive material that was exposed to the laser light is dissolved in a developer solution in an amount proportional to the amount of the exposure and the time in the developer. Thus, the exposed and developed master disk has a surface with high regions, where the photosensitive material was not exposed (or was not exposed as much as other regions), and with low regions, where the material was exposed (or was exposed more than other regions). *Id.* at col.1 l.32 – col.2 l.44, figs.1–3. The high regions of this surface relief pattern are termed “lands,” and the low regions are “‘grooves’ and/or pits (i.e., interrupted grooves).” *Id.* at col.1 ll.36–40. The disk and laser are moved relative to each other during the exposure step to create a series of adjacent lands and grooves or pits—this is the “track” or “data track.” *Id.* at col.1 ll.32–40, col.7 ll.50–60.

One problem with the prior art approach to creating the master-disk surface relief pattern is that there is a trade-off between the depth of the groove and the width of the land: the deeper the groove, the narrower the land, and the narrower the land (beyond a point), the rougher the surface of the land. *Id.* at col.2 l.57 – col.3 l.33, fig.4. This trade-off limits the number of tracks that can be recorded on the master disk in that the distance between adjacent tracks (the track pitch) must be sufficiently large to prevent undesirable degradation of the lands while still maintaining sufficient groove depth. *Id.* at col.1 ll.32–36, col.2 ll.50–56, col.3 ll.8–17.

The inventions of the Asserted Patents relate to a mastering process that changes the prior art relationship between land width and groove depth by varying the initial thickness of the photosensitive material to suit the desired land width and groove/pit depth. *See, e.g., id.* at col.3 ll.37–60, col.4 ll.44–65, col.5 ll.30–39, col.5 l.61 – col.6 l.4, col.10 ll.33–49, fig.12. An example of a master-disk surface relief pattern according to the inventions is depicted in Figure 6, reproduced here and annotated by the Court. This figure shows a cross-sectional view of a portion of a master disk. *Id.* at col.7 ll.62–64. Data tracks (22) are defined by lands (34) and grooves (36) in a data layer (30) on a substrate (32). The groove bottom (42) coincides with the surface of the substrate, and the lands extend away, or up, from the substrate. The groove depth (44) is the height of the land relative to the surface of the substrate (which is the bottom of the groove). The distance along the groove bottom from the side of one land to the side of the other land is shown as the width of the groove bottom (46). *Id.* at col.7 l.62 – col.8 l.19.



This master disk may be used to create replica disks of various formats, including “audio CD, CD-ROM and video disk, such as DVD.” It may also be used to create “various types of recordable optical disks (e.g., CDR, magneto-optic, or phase-change disk formats[.]” *Id.* at col.7 ll.36–61. Figure 19, reproduced here, depicts stampers and replicas created through a multiple-generation replication process. A first-generation stamper made from the master disk has a surface relief pattern that is the inverse of the master disk’s—i.e., master grooves (108) correspond



to stamper lands (112), and master lands (106) correspond to stamper grooves (114). A replica disk made from the first generation stamper will be a positive replica of the master disk—i.e., the replica’s grooves (132) correspond to the master grooves (108), and the replica’s lands (130) correspond to master lands (106). A second-generation stamper made from the first-generation stamper will have a surface relief pattern that is the inverse of the first-generation stamper’s, and therefore the same as the master’s. Disks made with the second generation stamper will be an inverse replica of the master disk—i.e., the replica’s grooves (138) correspond to the master lands (106), and the replica’s lands (136) correspond to master grooves (108). Even-generation stampers produce an inverse replica (so-called reverse mastering), and odd-generation stampers produce a positive replica. *Id.* at col.11 ll.6–57.

The orientation of the surface relief pattern recorded on the master depends on which generation of stamper will be used to create the replica disks and on the intended use of the replica disks. *Id.* at col.11 ll.20–23 (“Data tracks are recorded onto the master disk 90, and have an orientation based on whether a replica disk substrate is molded from a first, second or third generation stamper.”), col.11 ll.58–60 (“It is recognized that the desired orientation of the master disk data layer 104 is dependent on the desired orientation of the replica disk substrate for its intended use.”). For example, high-density (low track-pitch) replica disks would be made with a second-generation stamper and would have “wide, flat, smooth lands and deep grooves.” *Id.* at col.11 ll.60–67. “Alternatively, for disks read through the substrate, a master disk formed using the master disk recording process in accordance with the present invention may be used in a first generation stamper or third generation stamper process where it is desired to mold a replica disk having flat pits or grooves.” *Id.* at col.11 l.67 – col.12 l.5.

The abstracts of the Asserted Patents provide as follows:

The '685 Patent:

A data storage master disk and method of making a data storage master disk. The data storage disk master is for use in a data storage disk replication process. The data storage disk molding processes produces replica disks having a surface relief pattern with replica lands and replica grooves. The method includes providing a master substrate. The master substrate is at least partially covered with a layer of photosensitive material. A surface relief pattern having master lands and master grooves is recorded in the data storage disk master, including the steps of exposing and developing the photosensitive material. The exposing and developing of a specified thickness of photosensitive material is controlled to form master grooves extending down to a substrate interface between the master substrate and the layer of photosensitive material, such that the width of the master grooves at the substrate interface corresponds to a desired width of the replica lands.

The '016 Patent:

A data storage master disk and method of making a data storage master disk. The data storage disk master is for use in a data storage disk replication process. The data storage disk molding processes produces replica disks having a surface relief

pattern with replica lands and replica grooves. The method includes providing a master substrate. The master substrate is at least partially covered with a layer of photosensitive material. A surface relief pattern having master lands and master grooves is recorded in the data storage disk master, including the steps of exposing and developing the photosensitive material is controlled to form master grooves extending down to a substrate interface between the master substrate and the layer of photosensitive material, such that the width of the master grooves at the substrate interface corresponds to a desired width of the replica lands.

The '931 Patent:

Data storage replica disks having a surface relief pattern with replica lands and replica grooves are provided.

The '633 Patent:

A data storage master disk and method of making a data storage master disk. The data storage disk master is for use in a data storage disk replication process. The data storage disk molding processes produces replica disks having a surface relief pattern with replica lands and replica grooves. The method includes providing a master substrate. The master substrate is at least partially covered with a layer of photosensitive material. A surface relief pattern having master lands and master grooves is recorded in the data storage disk master, including the steps of exposing and developing the photosensitive material is controlled to form master grooves extending down to a substrate interface between the master substrate and the layer of photosensitive material, such that the width of the master grooves at the substrate interface corresponds to a desired width of the replica lands.

The '334 Patent:

Data storage replica disks having a surface relief pattern with replica lands and replica grooves are provided.

Claims 1–6 of the '685 Patent and Claims 1–9 of the '334 Patent, provided here as examples, recite as follows:

'685 Patent

1. A replica disk made from a replication process that includes creation of a master disk, creation of a first-generation stamper from the master disk and creation of a second-generation stamper from the first-generation stamper, the replica disk comprising:

a replica substrate having a first major surface and a second major surface, the first major surface including a surface relief pattern defined by adjacent lands and grooves, the surface relief pattern having a track pitch less than 425 nanometers, wherein the grooves extend down into the replica substrate, the grooves including groove bottoms and the lands including land tops, wherein the land tops are wider than the groove bottoms.

2. The replica disk of claim 1, wherein the land tops are generally flat and coplanar.

3. The replica disk of claim 1, wherein the grooves define a groove depth that is greater than 20 nanometers.

4. The replica disk of claim 1, wherein widths of the land tops are greater than 80 nanometers.

5. The replica disk of claim 1, wherein widths of the land tops are greater than 250 nanometers.

6. The replica disk of claim 1, wherein the replica disk is created from the second-generation stamper.

'334 Patent

1. A disk for storing information, comprising:

a surface including tracks comprising lands and pits, wherein the surface corresponds to a recording layer of the disk, wherein the tracks have a track pitch that is less than 375 nm, wherein the pits have a pit depth, and wherein the pit depth ranges from 55 nm to 110 nm.

2. The disk of claim 1, wherein the pit depth ranges from 78 nm to 110 nm.

3. The disk of claim 1, wherein the pit depth ranges from 91 nm to 110 nm.

4. The disk of claim 1, wherein the disk is a replica disk that is formed from a master stamper disk.

5. The disk of claim 1, wherein the tracks are spiral tracks defined by adjacent lands and pits.

6. The disk of claim 1, wherein the lands are substantially flat.

7. The disk of claim 1, wherein the disk for storing information is a DVD disk.

8. The disk of claim 1, wherein the lands and pits represent information encoded on the surface.

9. The disk of claim 1, wherein the tracks are concentric spiral tracks, spaced radially from a disk center, defined by adjacent lands and pits.

II. LEGAL PRINCIPLES

A. Claim Construction

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim

term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) (“There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.”) (vacated on other grounds).

“The claim construction inquiry. . . begins and ends in all cases with the actual words of the claim.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). “[I]n all aspects of claim construction, ‘the name of the game is the claim.’” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term’s context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim’s meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term’s meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, “[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and

examples appearing in the specification will not generally be read into the claims.’’ *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. “[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office (“PTO”) and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, “because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.* at 1318; *see also Athletic Alts., Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be “unhelpful as an interpretive resource”).

Although extrinsic evidence can also be useful, it is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert’s conclusory, unsupported

assertions as to a term's definition are entirely unhelpful to a court. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.* The Supreme Court recently explained the role of extrinsic evidence in claim construction:

In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be "so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning"). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the "evidentiary underpinnings" of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

B. Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution."² *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Sols.*, 750 F.3d at 1309.

² Some cases have characterized other principles of claim construction as "exceptions" to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

To act as his own lexicographer, the patentee must “clearly set forth a definition of the disputed claim term,” and “clearly express an intent to define the term.” *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee’s lexicography must appear “with reasonable clarity, deliberateness, and precision.” *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee’s statements in the specification or prosecution history must amount to a “clear and unmistakable” surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 (“The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.”). “Where an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

C. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)³

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a “means . . . for performing a specified function” and that an act may be claimed as a “step for performing a specified function.” *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes “means” or “step for” terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326;

³ Because some of the applications resulting in the some of the Asserted Patents were filed before September 16, 2012, the effective date of the America Invents Act (“AIA”), the Court refers to the pre-AIA version of § 112. The Court understands that pre-AIA 35 U.S.C. § 112, ¶ 6 is substantially identical to AIA 35 U.S.C. § 112(f).

Williamson, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. See *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when “the claim language, read in light of the specification, recites sufficiently definite structure” (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when “the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure”); *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an “act” corresponding to “how the function is performed”); *Personalized Media Commc’ns, L.L.C. v. Int’l Trade Comm’n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (§ 112, ¶ 6 does not apply when the claim includes “sufficient structure, material, or acts within the claim itself to perform entirely the recited function . . . even if the claim uses the term ‘means.’” (quotation marks and citation omitted)).

When it applies, § 112, ¶ 6 limits the scope of the functional term “to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof.” *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. “The first step . . . is a determination of the function of the means-plus-function limitation.” *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). “[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof.” *Id.* A “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or

associates that structure to the function recited in the claim.” *Id.* The focus of the “corresponding structure” inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is “clearly linked or associated with the [recited] function.” *Id.* The corresponding structure “must include all structure that actually performs the recited function.” *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). However, § 112 does not permit “incorporation of structure from the written description beyond that necessary to perform the claimed function.” *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

D. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)⁴

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 2124. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 2130. As it is a challenge to the validity of a patent, the failure of

⁴ Because some of the applications resulting in the some of the Asserted Patents were filed before September 16, 2012, the effective date of the America Invents Act (“AIA”), the Court refers to the pre-AIA version of § 112. The Court understands that pre-AIA 35 U.S.C. § 112, ¶ 2 is substantially identical to AIA 35 U.S.C. § 112(b).

any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. “[I]ndefiniteness is a question of law and in effect part of claim construction.” *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, “the court must determine whether the patent provides some standard for measuring that degree.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015), *cert. denied*, 136 S. Ct. 569 (2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, “the court must determine whether the patent’s specification supplies some standard for measuring the scope of the [term].” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art “would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim.” *Id.* at 1352.

III. PERSON OF ORDINARY SKILL IN THE ART

Plaintiff submits that one of ordinary skill in the art as of the priority date of April 6, 1998, “would have had a bachelor’s degree in Electrical or Mechanical Engineering or Physics and at least 3-4 years of practical experience in the field of optical data storage.” Dkt. No. 88 at 10–11 (citing Laub Decl.⁵ ¶ 43, Dkt. No. 88-31 at 16).

⁵ Declaration of Leonard Laub in Support of Plaintiff Max Blu Technologies, LLC’s Opening Claim Construction Brief.

Defendant does not submit a particular definition for one of ordinary skill in the art, but Defendant's expert opines that Plaintiff's proposed definition is correct. *See* Wilkinson Decl.⁶ ¶ 24, Dkt. No. 93-1 at 7.

Accordingly, the Court adopts Plaintiff's proposed definition of one of ordinary skill in the art.

IV. AGREED CONSTRUCTIONS

The parties agreed to present jointly to the Court the following proposed constructions as set forth in their Joint Claim Construction Chart [Patent Rule 4-5(d)] (Dkt. No. 95):

Term⁷	Agreed Construction
“wherein the lands have a land width” • '334 Patent Claim 18	No construction necessary.
“groove bottoms” • '685 Patent Claims 1, 7	“lowest region of the grooves”
“tracks” • '334 Patent Claims 1, 10, 18	“a series of adjacent lands and grooves forming a desired surface relief pattern”
“radially adjacent lands” • '685 Patent Claim 30	“two lands separated by a groove in the radial direction”

Having reviewed the intrinsic and extrinsic evidence of record, the Court agrees with and hereby adopts the parties' agreed constructions with respect to “wherein the lands have a land width” and “groove bottoms.”

With respect to “tracks,” the Court determines that the parties' agreed construction is improperly limited to “grooves.” “Tracks” in the patents are described as “defined by high regions termed ‘lands’ and lower adjacent regions termed ‘grooves’ and/or pits (i.e., interrupted

⁶ Declaration of Richard Wilkinson on Claim Construction and Indefiniteness Issues.

⁷ For all term charts in this order, the claims in which the term is found are listed with the term but: (1) only the highest level claim in each dependency chain is listed, and (2) only asserted claims identified in the parties Joint Claim Construction Chart [Patent Rule 4-5(d)] (Dkt. No. 95) are listed.

grooves).” ’685 Patent col.1 ll.36–40. Indeed, the claims of the ’334 Patent each recite “tracks comprising lands and pits.” ’334 Patent col.13 l.42, col.14 l.16, col.14 l.36. The parties’ agreed construction improperly fails to capture that tracks may be formed by lands and pits.

With respect to “radially adjacent lands,” the Court similarly determines that the parties’ agreed construction is improperly limited to “grooves.” Claim 29 of the ’685 Patent, from which Claim 30 depends, recites a “surface relief pattern defined by lands that correspond to interrupted grooves formed in the master disk.” ’685 Patent col.16 ll.4–5. Claim 30 recites a particular “track pitch” that is “defined by radially adjacent lands.” *Id.* at col.16 ll.7–8. The parties’ agreed construction improperly fails to capture that tracks may be formed by lands and pits, and thus fails to capture that “radially adjacent lands” may be separated by a pit.

As set forth below, the Court determines that interrupted grooves are pits and that they are distinct from grooves. Accordingly, the Court construes “tracks” and “radially adjacent lands” as follows:

- “tracks” means “a series of adjacent lands and grooves or pits forming a desired surface relief pattern”;
- “radially adjacent lands” means “two lands separated by a groove or pit in the radial direction.”

V. CONSTRUCTION OF DISPUTED TERMS

A. “a replica disk made from a replication process that includes creation of a master disk, creation of a first-generation stamper from the master disk and creation of a second-generation stamper from the first generation stamper”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
<p>“A replica disk made from a replication process that includes creation of a master disk, creation of a first-generation stamper from the master disk and creation of a second-generation stamper from the first generation stamper”</p> <ul style="list-style-type: none"> • ’685 Patent Claims 1, 7, 29 	<p>No construction necessary (plain language) in light of other constructions.</p> <p>Alternative:</p> <ul style="list-style-type: none"> • “replica disk made from a multi-generation stamper process” 	<p>Indefinite under 35 U.S.C. § 112, ¶ 2</p> <p>Alternative:</p> <ul style="list-style-type: none"> • “replica disk made from a second-generation stamper, which was made from a first-generation stamper, which was made from a master disk”

The Parties’ Positions

Plaintiff submits that this term does not need construction apart from “master disk” because the meaning of the term is readily understandable to a lay person. Dkt. No. 88 at 14–15. According to Plaintiff, the ’685 Patent describes that third-generation stampers and later can be used to create replica disks, and this term does not restrict the claimed replica disk to one that is made with a second-generation stamper. *Id.* at 15. Plaintiff argues that the plain meaning of the term is that the replica disk is made with a second-generation stamper *or* with a stamper of a generation later than second. *Id.* Plaintiff also argues that it would be improper to construe this term as requiring a second-generation stamper since a second-generation stamper is explicitly recited in dependent Claims 6 and 12 of the ’685 Patent. *Id.* Plaintiff further argues that nothing in the ’685 Patent or the related prosecution histories limits the replica disk to one that is the inverse of the master (i.e., one that is created through reverse optical mastering). *Id.* at 16. Plaintiff notes that such an inverse disk is explicitly recited in independent Claim 29, which

requires that the replica disk's lands correspond to the master disk's grooves, and argues that it would be improper to read an inverse-replica limitation into the other claims. *Id.*

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '685 Patent col.4 ll.41–42, col.11 ll.6–23, col.11 ll.25–40, col.11 l.63 – col.12 l.37, col.12 l.65 – col.13 l.1, col.13 ll.4–12, figs.19, 21; '685 Patent File Wrapper November 4, 2005 Supplemental Preliminary Amendment (Plaintiff's Ex. H, Dkt. No. 88-9); '825 Application File Wrapper⁸ (excerpts) (Plaintiff's Ex. F, Dkt. No. 88-7); '246 Application File Wrapper⁹ (excerpts) (Plaintiff's Ex. G, Dkt. No. 88-8). **Extrinsic evidence:** Laub Decl. ¶¶ 61–71 (Dkt. No. 88-31 at 20–26).

Defendant responds that this term defines the replica disk in part by the process used to create the disk and thus the term renders the claims product-by-process claims.¹⁰ Dkt. No. 93 at 15–16. Defendant argues that the process of this term, as described in the '685 Patent and the related prosecution histories, is a reverse optical mastering process and therefore requires that the replica be made with an even-numbered generation stamper—the second-generation stamper recited in the term. *Id.* at 16–17. Defendant contends that the explicit recitation of a “second-generation” stamper in dependent claims “is of no import” because the independent claims require the second-generation stamper. *Id.* at 16. Defendant further contends that the term excludes odd-numbered generation stampers because the process to create a replica disk that has a pattern that is the inverse of the master (reverse mastering) is not interchangeable with a process to create a replica disk that has a pattern that is the same as the master. *Id.* at 17.

⁸ U.S. Patent Application No. 09/055,825 (the “'825 Application”) was filed on April 6, 1998, and is in the claimed priority chain for each of the Asserted Patents. *See, e.g.*, '685 Patent, at [60] Related U.S. Application Data.

⁹ U.S. Patent Application No. 09/730,246 (the “'246 Application”) was filed on December 5, 2000, and is in the claimed priority chain for each of the Asserted Patents. *See, e.g., id.*

¹⁰ Defendant also raises, but does not argue, two other issues: (1) whether this term is limiting at all, since it appears in the preamble, and (2) whether this term improperly injects method steps into apparatus claims, and therefore renders the claims indefinite. Dkt. No. 93 at 16.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '685 Patent, at [54] Title, col.4 ll.43–65; '685 Patent File Wrapper November 4, 2005 Supplemental Preliminary Amendment (Defendant's Ex. 7, Dkt. No. 93-14 at 2–9), October 2, 2007 Response (Defendant's Ex. 7, Dkt. No. 93-14 at 10–17); '246 Application File Wrapper December 19, 2003 Amendment (Defendant's Ex. 6, Dkt. No. 93-13). **Extrinsic evidence:** Wilkinson Decl. ¶¶ 71–74 (Dkt. No. 93-1 at 24–25).

Plaintiff replies to reiterate that certain claims are explicitly directed to reverse mastering using an even-numbered generation of stamper, and other claims are not. Dkt. No. 94 at 5–6. Therefore, Plaintiff argues, reverse mastering should not be imported into every claim. *Id.* Plaintiff further replies that, because the claims allow for either positive or inverse replicas, whether an odd-numbered generation stamper can be used to create the same replica disk as an even-numbered generation stamper is irrelevant. *Id.* at 7.

Plaintiff cites further **intrinsic evidence** to support its position: '685 Patent File Wrapper October 2, 2007 Response (Defendant's Ex. 7, Dkt. No. 93-14 at 10–17).

Analysis

The parties' dispute over this term raises two issues. The first issue is whether the term renders claims indefinite by injecting methods steps into apparatus claims. The second issue is whether the term limits the claims to replicas made with a second-generation stamper. With respect to the first issue, Defendant has presented no argument or evidence that this term renders any claim indefinite and therefore fails to prove such. With respect to the second issue, the Court understands that the replica disk of the claims including this term is defined in part by the multiple-generation-stamper process by which the disk is made, and that process is an open-

ended process that includes at least two generations of stamper—but is not limited to two generations of stamper.

To begin, the Court rejects Defendant’s argument that the Asserted Patents are somehow all limited to a reverse-mastering process. To the contrary, the patents explicitly provide that “a master disk formed using *the master disk recording process in accordance with the present invention may be used in a first generation stamper or third generation stamper process* where it is desired to mold a replica disk having flat pits or grooves.” ’865 Patent col.11 l.67 – col.12 l.5 (emphasis added); *see also*, col.11 ll.20–23 (noting that a replica disk may be “molded from a first, second or third generation stamper”). That is, the patents expressly contemplate that the invention includes odd-numbered-stamper replication—which is not reverse mastering. Defendant’s reliance on “reverse optical mastering” in the titles of some of the Asserted Patents is misplaced—while the title may have some small bearing on claim construction, it is not proper to read in claim limitations from the title. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1312 (Fed. Cir. 1999) (noting the “near irrelevancy of the patent title to claim construction” and stating that “if we do not read limitations into the claims from the specification that are not found in the claims themselves, then we certainly will not read limitations into the claims from the patent title”). Likewise, Defendant’s reliance on its expert’s opinion is misplaced—the Court finds that opinion is clearly at odds with the plain text of the patent and is therefore not credible. Further, Defendant has not presented prosecution-history evidence sufficient to establish that the first- and third-generation stamper embodiments were unequivocally disavowed during prosecution.

The Court understands Claims 1, 7, and 29 of the ’685 Patent are clearly directed to a replica disk and that this disk is defined in part by the replication process recited in the preamble

term at issue. This claim explicitly recites that the disk is ‘made from a replication process that *includes* [various steps].’ The Court understands “includes” here is an open-ended transitional phrase indicating the “replication process” includes all the recited steps but may include more steps. *See Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1214 (Fed. Cir. 2008) (“This court has consistently interpreted ‘including’ and ‘comprising’ to have the same meaning, namely, that the listed elements (i.e., method steps) are essential but other elements may be added.”). Thus, this term may include more steps, such as the creation of a third-generation stamper as illustrated in Figures 19 and 21 of the ’685 Patent.

Further, the Court finds that the replica disk is not necessarily made by the second-generation stamper because that limitation is separately recited in dependent Claim 6, which states: “The replica disk of claim 1, wherein the replica disk is created from the second generation stamper.” Thus, there is a presumption that Claim 1 does not require that the disk be made by the second-generation stamper. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc) (“[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.”). Defendant has failed to overcome this presumption.

Accordingly, the Court construes the term as follows:

- “A replica disk made from a replication process that includes creation of a master disk, creation of a first-generation stamper from the master disk and creation of a second-generation stamper from the first generation stamper” means “A replica disk made from a replication process that includes—but is not limited to—creation of a master disk, creation of a first-generation stamper from the master

disk and creation of a second-generation stamper from the first generation stamper.”

B. “master disk”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“master disk” <ul style="list-style-type: none"> • ’685 Patent Claims 1, 7, 29 	“a disk carrying the original surface relief pattern to be replicated”	“a disk having a surface relief pattern that is the inverse of the replica disk substrate”

The Parties’ Positions

Plaintiff submits that the ’685 Patent uses the term “master disk” according to its customary meaning in the art, namely, to refer to the disk that carries the relief pattern that is to be replicated. Dkt. No. 88 at 17–18. According to Plaintiff, the patent describes that the relief pattern may be replicated as a positive or a negative (inverse) according to the generation of stamper used to make the replica. *Id.* at 18. Plaintiff argues that whether the claimed replica disk is an inverse of the master disk is not a function of the definition of “master disk” but rather is a function of limitations explicitly recited in some of the claims, but not in others. *Id.* at 18–19. Because the replica is expressly required to be the inverse of the master in some claims (e.g., through a second-generation-stamper limitation or through a limitation requiring that the replica lands correspond to the master grooves) but not in others, Plaintiff concludes that it is improper to read an inverse relationship between the master disk and the replica disk into the definition of “master disk.” *Id.* at 18–19.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.3 ll.37–43, col.3 ll.51–54, col.4 ll.51–55, col.7 ll.37–40, col.7 ll.50–54. **Extrinsic evidence:** Laub Decl. ¶¶ 45–50, 72–78 (Dkt. No. 88-31 at 16–18, 27–29); Stan Gibilisco, *The Illustrated Dictionary of Electronics* (7th

ed. 1997), “master” (Plaintiff’s Ex. I, Dkt. No. 88-10); Jim Taylor, *DVD Demystified* (1997), Glossary “master” (Plaintiff’s Ex. J-1, Dkt. No. 88-11).

Defendant responds that the asserted claims of the ’685 Patent are all directed to a replica disk made with a second-generation stamper and therefore the replica disk is necessarily an inverse copy of the master disk. Dkt. No. 93 at 18. Defendant argues that disclosure and prosecution histories establish that the Asserted Patents “are all directed to a ‘reverse mastering process’” that creates replica disks with lands that correspond to the master disk’s grooves—the replica disk is an inverse of the master disk. *Id.* According to Defendant, whether some claims explicitly recite that the replica disk is the inverse of the master disk is irrelevant because “claim differentiation arguments . . . cannot outweigh the . . . intrinsic evidence” establishing that the claims are directed to replica disks created by a reverse-mastering process. *Id.* at 19.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent, at [54] Title, [57] Abstract, col.4 ll.20–26, col.4 ll.43–65, col.7 ll.19–35, col.8 ll.27–60, col.11 ll.6–10, figs.9–19; ’685 Patent File Wrapper November 4, 2005 Supplemental Preliminary Amendment (Defendant’s Ex. 7, Dkt. No. 93-14 at 2–9); ’246 Application File Wrapper December 19, 2003 Amendment (Defendant’s Ex. 6, Dkt. No. 93-13). **Extrinsic evidence:** Wilkinson Decl. ¶¶ 75–80 (Dkt. No. 93-1 at 25–26).

Plaintiff replies that: (1) the Asserted Patents teach that replica disks may be made with either odd-numbered generation stampers or even-numbered generation stampers and (2) some—but not all—claims are explicitly directed to even-numbered generation stampers and the reverse mastering process. Dkt. No. 94 at 7–9. Thus, Plaintiff concludes, the patents are not directed solely to the reverse mastering process. *Id.*

Analysis

The dispute here distills to whether the “master disk” of the claims is necessarily one that is replicated only by a reverse-mastering process. It is not.

As stated above, the Court rejects Defendant’s and its expert’s position that the Asserted Patents are limited to reverse-mastering, where the replica disks are inverse copies of the master disk. That position is clearly at odds with the plain meaning of the description of the inventions.

Further, based on the extrinsic evidence of record, the Court finds that “master disk,” as the term is customarily used in the art, is not limited to a disk that is used to make inverse replica disks. The customary meaning of “master disk” is that it is the disk that is copied. *See, e.g.,* Stan Gibilisco, *The Illustrated Dictionary of Electronics* 426 (7th ed. 1997), Dkt. No. 88-10, at 6 (defining “master” as “a primary data medium or recording from which copies are made”).

Further, this is exactly how “master disk” is used in the Asserted Patents:

Optical disks are produced by making a master which has a desired surface relief pattern formed therein. The surface relief pattern is created using an exposure step (e.g., by laser recording) and a subsequent development step. The master is used to make a stamper, which in turn is used to stamp out replicas in the form of optical master substrates. As such, the surface relief pattern, information and precision of a single master can be transferred into many inexpensive replica optical disk substrates.

’685 Patent col.1 ll.23–31. Thus, the Court holds that “master disk” is not used in the Asserted Patents to refer to a disk from which only inverse replicas can be made. A master disk may be positively or inversely replicated.

Accordingly, the Court construes “master disk” as follows:

- “master disk” means “disk carrying the original surface relief pattern to be positively or inversely replicated.”

C. “surface relief pattern” and “surface pattern”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“surface relief pattern” <ul style="list-style-type: none"> • ’685 Patent Claims 1, 7, 19, 29 	No construction necessary (plain language) Alternative: <ul style="list-style-type: none"> • “surface geometry” 	“a surface pattern of concentric or spiral tracks”
“surface pattern” <ul style="list-style-type: none"> • ’685 Patent Claim 19 • ’016 Patent Claim 1 • ’931 Patent Claims 1, 11 • ’633 Patent Claim 1 		

Because the parties’ arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties’ Positions

Plaintiff submits that these terms are understandable to a juror without construction. Dkt. No. 88 at 19. Further, Plaintiff contends that “surface relief pattern” is defined in the Asserted Patents as “surface geometry.” *Id.* (quoting ’685 Patent col.7 ll.50–51). Plaintiff argues that Defendant’s proposed construction does not clarify claim scope in that it uses “surface pattern” to define “surface pattern” and further argues that it improperly imports a “concentric or spiral tracks” limitation from the exemplary embodiments. *Id.* at 19. According to Plaintiff, a surface relief pattern of a disk is not inherently concentric or spiral. *Id.* at 19–20 (citing Laub Decl. ¶ 82, Dkt. No. 88-31 at 33–34).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.6 ll.55–63, col.7 ll.50–51, col.9 ll.11–13. **Extrinsic evidence:** Laub Decl. ¶¶ 80–86 (Dkt. No. 88-31 at 29–35).

Defendant responds that the Asserted Patents teach and illustrate that the “surface pattern” comprises concentric or spiral tracks. Dkt. No. 93 at 19 (citing ’685 Patent col.1 ll.32–

40, col.7 l.50 – col.8 l.7, fig.5). Defendant further responds that the disclosure of the Asserted Patents “contains no description of tracks that are not in a spiral or concentric pattern.” *Id.* at 20. According to Defendant, the applicants conceded that the surface pattern is a spiral track. *Id.* at 20. Specifically, Defendant contends that when the patent examiner rejected a claim in a parent application based on a prior-art disclosure of a spiral pattern, the applicants did not object that the claim did not create a spiral pattern—“effectively conceding the Examiner’s spiral pattern interpretation” of “surface relief pattern.” *Id.* (citing ’825 Application File Wrapper: April 6, 1998 Filing, Dkt. No. 93-11 at 26; September 30, 1999 Office Action at 6, Dkt. No. 93-12 at 8; January 4, 2000 Amendment at 5–9, Dkt. No. 93-12 at 15–19; May 11, 2000 Amendment at 5–7, Dkt. No. 93-12 at 24–26).

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.1 ll.32–40, col.5 ll.16–20, col.6 ll.33–40, col.6 ll.48–52, col.7 l.50 – col.8 l.7, col.9 ll.26–37, figs.1–3, 5, 6, 9–11, 13–19; ’825 Application File Wrapper April 6, 1998 Filing (Defendant’s Ex. 4 Dkt. No. 93-11), September 30, 1999 Office Action (Defendant’s Ex. 5, Dkt. No. 93-12 at 2–10), January 4, 2000 Amendment (Defendant’s Ex. 5, Dkt. No. 93-12 at 11–19), May 11, 2000 Amendment (Defendant’s Ex. 5, Dkt. No. 93-12 at 20–30). **Extrinsic evidence:** Wilkinson Decl. ¶¶ 81–84 (Dkt. No. 93-1 at 26–27).

Plaintiff replies that “surface relief pattern” and “surface pattern” are routinely modified with “spiral” or “concentric or spiral” in the Asserted Patents and that this indicates that “surface relief patterns”/“surface patterns” are not inherently concentric or spiral. Dkt. No. 94 at 9. Plaintiff further replies that the applicants’ silence regarding whether a claim created a spiral

pattern in the prosecution of the '825 Application “does not meant patentees conceded anything.”
See id.

Analysis

The issue with respect to this term is whether a “surface relief pattern” is necessarily formed in spiral or concentric tracks. The Court understands that a surface relief pattern is not inherently spiral or concentric.

“Surface relief pattern” and “surface pattern” are used equivalently in the Asserted Patent to denote the geometric pattern of the lands and grooves or pits. The patents provide that the surface relief pattern has lands and grooves “in a desired track pattern.” ’685 Patent col.4 ll.49–55. The patents also provide that “in one aspect, the desired track pattern is a spiral track.” *Id.* at col.5 l.16. Further, the patents explain that the “[m]aster disk 20 includes surface relief pattern (i.e., surface geometry) in the form of ‘data tracks’ . . . [that] can be arranged in a spiral track . . . [or] can also lie in a series of concentric tracks.” *Id.* at col.7 ll.50–60. However, there is nothing in the patents that clearly requires the tracks to be either spiral or concentric. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc) (“we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment”); *see also Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) (“It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that.”); *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc) (“The law does not require the impossible. Hence, it does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention.”).

The Court is not persuaded by Defendant’s argument that, during the prosecution of the ’825 Application, the applicants conceded that a surface relief pattern is necessarily in the form of a spiral track. The patents clearly describe that the surface pattern can comprise spiral tracks of lands and grooves or pits. The prosecution history cited by the Defendant evinces nothing more than the examiner’s recognition of this—i.e., the prior art disclosed a spiral pattern and therefore disclosed a surface pattern. *See* ’825 Application File Wrapper: April 6, 1998 Filing, Dkt. No. 93-11 at 26; September 30, 1999 Office Action at 6, Dkt. No. 93-12 at 8. The applicant’s silence with respect to this is understandable; a spiral pattern of lands and grooves is an explicitly described embodiment of a surface relief pattern in the Asserted Patents. Further, the applicant’s silence cannot alone be used to limit the claims. *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1345–47 (Fed. Cir. 2005) (“an applicant’s silence regarding statements made by the examiner during prosecution, without more, cannot amount to a ‘clear and unmistakable disavowal’ of claim scope”).

Given that Defendant’s proposed construction uses “surface pattern,” the Court finds that the only dispute here is whether the surface pattern of the Asserted Patents is necessarily spiral or concentric, and there is no dispute that the term is otherwise readily understood.

Accordingly, the Court rejects Defendant’s proposed “concentric or spiral tracks” limitation and holds that “surface relief pattern” and “surface pattern” have their plain and ordinary meaning without need for further construction.

D. “lands”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
---------------	-----------------------------------	-----------------------------------

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
“lands” <ul style="list-style-type: none"> • ’685 Patent Claims 1, 7, 19, 29 • ’016 Patent Claim 1 • ’931 Patent Claims 1, 11 • ’633 Patent Claim 1 • ’334 Patent Claims 1, 10, 18 	“regions of a surface other than grooves, interrupted grooves, or pits”	“elevated regions of the recording layer”

The Parties' Positions

Plaintiff submits that “lands” in the Asserted Patents refers to the high regions of the surface relief pattern, in contrast with the “pits” and “grooves” which denote the low regions of the surface relief pattern. Dkt. No. 88 at 20 (quoting ’685 Patent col.1 ll.37–40). This, according to Plaintiff, is how “land” is customarily used in the art. *Id.* (citing Stan Gibilisco, *The Illustrated Dictionary of Electronics* at 391, 525 (7th ed. 1997), Dkt. No. 88-10 at 5, 7). The objection Plaintiff voices with respect to Defendant’s proposed construction is that “elevated” implies that the lands are raised above the surface when, in fact, the lands are what remains of the surface. *Id.*

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.1 ll.37–40. **Extrinsic evidence:** Laub Decl. ¶¶ 87–94 (Dkt. No. 88-31 at 35–37); Stan Gibilisco, *The Illustrated Dictionary of Electronics* (7th ed. 1997), “land” and “pit” (Plaintiff’s Ex. I, Dkt. No. 88-10).

Defendant responds that “elevated” in its proposed construction does not mean that the lands are raised above a surface, but rather “elevated” is meant to give effect to the Asserted Patents’ teachings that the lands are the areas of the recording layer that are relatively higher than the grooves or pits. Dkt. No. 93 at 21–22.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '685 Patent col.1 ll.36–40, figs.1–3, 6, 9–11, 13–19. **Extrinsic evidence:** Wilkinson Decl. ¶¶ 85–87 (Dkt. No. 93-1 at 27–28); Stan Gibilisco, *The Illustrated Dictionary of Electronics* (7th ed. 1997), “land” and “pit” (Plaintiff’s Ex. I, Dkt. No. 88-10); Masud Mansuripur, *The Physical Principles of Magneto-optical Recording* (1995) (excerpts) (Plaintiff’s Ex. O, Dkt. No. 88-17); *The IEEE Standard Dictionary of Electrical and Electronics Terms* (6th ed. 1996), “land” (Plaintiff’s Ex. AA, Dkt. No. 88-29); Alan B. Marchant, *Optical Recording: A Technical Overview* (1990) (excerpts), Terms and Acronyms “Land area” (Plaintiff’s Ex. L, Dkt. No. 88-14).

Plaintiff replies that Defendant’s proposed “recording layer” limitation is not supported by the intrinsic evidence—the term “recording layer” is not found in the Asserted Patents. Dkt. No. 94 at 9–10. Plaintiff further replies that the extrinsic evidence establishes that lands exist on read-only discs, which do not have a recording layer. *Id.*

Plaintiff cites further intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '685 Patent col.7 ll.45–46. **Extrinsic evidence:** Laub Decl. ¶¶ 85–86 (Dkt. No. 88-31 at 34–35).

Analysis

The dispute here centers on whether the lands are necessarily part of a “recording layer.” To the extent Defendant uses “recording layer” to refer to a layer that exists only in recordable optical disks, the Court determines that “lands” are not necessarily “regions of the recording layer.”

To begin, the Court rejects Defendant’s argument that the Asserted Patents are directed solely to recordable optical disks, as expressed, for example, at page 1 of Defendant’s responsive

brief (Dkt. No. 93 at 11). To the contrary, the patents explicitly provide that the master can be used to create read-only replica disks or recordable replica disks:

In FIG. 5, a data storage master disk 20 in accordance with the present invention is generally shown. Master disk 20 may be used as part of a disk replication process (e.g., a disk molding process) for producing various formats of optical data disks. The data features on the optical data disks may include data pits, grooves, bumps or ridges, and land or land areas. This includes current formats of audio CD, CD-ROM and video disk, such as DVD, as well as future formats which use data features described herein. The definition of optical data disks may include various types of recordable optical disks (e.g., CDR, magneto-optic, or phase-change disk formats, which commonly use features, such as grooves or pits, for tracking and address identification, even though data is subsequently recorded by the users.

'685 Patent col.7 ll.36–49. Thus, the data track “may include features representing data encoded therein *or* which allow the storage, reading, and tracking of data thereon.” *Id.* at col.7 ll.50–54 (emphasis added). That is, the Asserted Patents describe inventions that can be used to make read-only optical disks with “data encoded thereon” or to make recordable optical disks “which allow the storage . . . of data thereon.” The Court finds that Defendant’s expert’s opinion on this issue is clearly at odds with the plain text of the patent and is therefore not credible.

The lands are described in the patents as the high regions in the “data layer.” For example, the patents provide: “The data tracks 22 are defined by a series of adjacent master lands 34 and master grooves 36 *formed in the data layer 30.*” *Id.* at col.7 l.67 – col.8 l.2 (emphasis added); *see also* col.11 ll.34–40 (“replica disk substrate 1 includes substrate 1 *data layer 128 having substrate 1 lands 130*” (emphasis added)). The patents further provide that the “track forming the desired surface relief pattern as a result of the mastering process can be defined by high regions termed ‘lands’ and lower adjacent regions termed ‘grooves’ and/or pits (i.e., interrupted grooves).” *Id.* at col.1 ll.36–40. Thus, “lands” in the patents is explicitly described as referring to the “high regions” defining the track, and the tracks are described as in the “data layer.” The patents do not define a land as necessarily in the recording layer.

Accordingly, the Court construes “lands” as follows:

- “lands” means “high regions of the surface relief pattern.”

E. “land tops,” “wherein the lands have tops,” and “tops of the lands”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“land tops” <ul style="list-style-type: none">• ’685 Patent Claims 1, 7, 19, 29	No construction necessary in light of the construction of “land”	“the highest surface points of lands that collectively form a flat planar surface”
“wherein the lands have tops” <ul style="list-style-type: none">• ’931 Patent Claim 3		
“tops of the lands” <ul style="list-style-type: none">• ’016 Patent Claim 1• ’931 Patent Claims 4, 11• ’633 Patent Claim 1		

The Parties’ Positions

Plaintiff submits that this term does not need to be construed apart from the construction of “land.” Dkt. No. 88 at 21. Plaintiff further submits that Defendant’s proposed construction is essentially that the land tops must be flat and coplanar, which limitation is explicitly recited in some claims (e.g., ’685 Patent Claim 2 (“wherein the land tops are generally flat and coplanar”)). *Id.* Because the “flat and coplanar” limitation is explicitly recited in some claims but not in others, Plaintiff argues that a “flat and coplanar” limitation should not be read into the claims that do not recite such a limitation. *Id.*

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Laub Decl. ¶¶ 96–102 (Dkt. No. 88-31 at 38–41); *Merriam Webster’s Collegiate Dictionary* (10th ed. 1996), “top” (Plaintiff’s Ex. K, Dkt. No. 88-13).

Defendant responds that its proposed construction “merely clarifies *where* the top of the land is compared to the rest of the land.” Dkt. No. 93 at 22–23 (emphasis in original). Defendant further responds that the Asserted Patents describe the replica lands as flat and coplanar and that, therefore, the land tops should be construed to “collectively form a flat planar surface.” *Id.* at 23. According to Defendant, this description overcomes any claim-differentiation presumption. *Id.*

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.6 ll.9–13, col.8 ll.46–60, fig.19. **Extrinsic evidence:** Wilkinson Decl. ¶¶ 88–92 (Dkt. No. 93-1 at 29–31); *Merriam Webster’s Collegiate Dictionary* (10th ed. 1996), “top” (Plaintiff’s Ex. K, Dkt. No. 88-13); *The IEEE Standard Dictionary of Electrical and Electronics Terms* (6th ed. 1996), “land” (Plaintiff’s Ex. AA, Dkt. No. 88-29); Alan B. Marchant, *Optical Recording: A Technical Overview* (1990) (excerpts), Terms and Acronyms “Land area” (Plaintiff’s Ex. L, Dkt. No. 88-14).

Plaintiff replies that the intrinsic evidence does not support limiting the land tops to land tops that “collectively form a flat planar surface” and that such limitation would render numerous claims superfluous. Dkt. No. 94 at 10–11. Plaintiff further replies that inspection of Figures 13, 16, and 19 of the ’685 Patent shows the land tops in those embodiments do not “collectively form a flat planar surface.” *Id.* at 11; Dkt. No. 94-1 (annotated Figures).

Plaintiff cites further **intrinsic evidence** to support its position: ’685 Patent figs.13, 16, 19 (annotated by Plaintiff at Plaintiff’s Ex. CC, Dkt. No. 94-1).

Analysis

The issue here is whether lands on a particular disk are necessarily all the same height, such that they “collectively form a flat planar surface.” The Court finds that lands on a disk are not necessarily the same height.

The tops of the lands are not necessarily level with each other. The Asserted Patents describe that “[i]n one preferred embodiment the land tops are level with each other to the precision of the flatness of the master disk substrate.” ’685 Patent col.6 ll.10–12. Contrary to Defendant’s contention, this description of “one preferred embodiment” implies that lands on a disk are not inherently “level with each other.” *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (noting that the use of the term “steel baffles” “strongly implies that the term ‘baffles’ does not inherently mean objects made of steel”). Even if every embodiment was so described—and this feature is described as in *one* embodiment—that is not enough to read a “flat planar surface” into the claims. *See Phillips*, 415 F.3d at 1323 (“we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment”); *see also Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) (“It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that.”). Further, Claim 2 of the ’685 Patent recites: “The replica disk of claim 1, wherein the land tops are generally flat and coplanar.” Thus, there is a presumption that Claim 1 does not require that the land tops are flat and coplanar. *Phillips*, 415 F.3d at 1315 (“[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.”). Defendant has failed to overcome this presumption.

As the Court is construing “lands,” the only remaining issue is whether “top” needs to be construed. There is no legitimate dispute as to whether the plain meaning of “top” refers to the highest part. It does.

Accordingly, the Court rejects Defendant’s proposed “that collectively form a flat planar surface” and holds that these terms have their plain and ordinary meanings without need for further construction.

F. “grooves,” “interrupted grooves,” and “pits”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“grooves” <ul style="list-style-type: none"> • ’685 Patent Claims 1, 7, 19 • ’016 Patent Claim 1 • ’931 Patent Claims 1, 11 • ’633 Patent Claim 1 	“lower regions of a surface relief pattern adjacent to lands”	“continuous concentric or spiral lower regions of the recording layer that are formed between adjacent lands” <p>[Defendant contends that the term “grooves” in claims 1, 5, 7, and 8 of the ’016 Patent is indefinite under 35 U.S.C. § 112, ¶ 2, but Defendant provides the proposed construction for this term in claims 1, 5, 7, and 8 of the ’016 Patent in the alternative.]</p>
“interrupted grooves” <ul style="list-style-type: none"> • ’685 Patent Claim 29 • ’016 Patent Claim 1 	“grooves segmented into pits”	Indefinite under 35 U.S.C. § 112, ¶ 2 <p>Alternative:</p> <ul style="list-style-type: none"> • “a generally continuous groove with discontinuities”
“pits” <ul style="list-style-type: none"> • ’334 Patent Claims 1, 10, 18 	“segments of grooves between interruptions” <p>Alternative:</p> <ul style="list-style-type: none"> • “a microscopic depression in a surface relief pattern” 	“exposed regions forming interruptions in the grooves at the header area of the master disk”

Because the parties’ arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits that the term “grooves” is defined in the Asserted Patents as the lower regions of the surface relief pattern that are adjacent to the lands. Dkt. No. 88 at 23 (citing ’685 Patent col.1 ll.36–40). Plaintiff further submits that an “interrupted groove” is described in the patents as a type of groove, namely, a groove that is segmented into pits. *Id.* (citing ’685 Patent col.1 ll.36–40, col.7 ll.44–49, col.9 ll.31–33). According to Plaintiff, “grooves” come in many forms and are not necessarily continuous. *Id.* at 25–27 (citing Alan B. Marchant, *Optical Recording: A Technical Overview* 259, 264–66 (1990), Dkt. No. 88-14 at 8–11; G. Bouwhuis et al., *Principles of Optical Disc Systems* 194, 262 (1985), Dkt. No. 88-15 at 6, 11; Alan Bell, *Optical Data Storage Technology Status and Prospects*, Computer Design Jan. 1983, at 133, 138,¹¹ Dkt. No. 88-16 at 7; Masud Mansuripur, *The Physical Principles of Magneto-optical Recording* 30, 47 (1995), Dkt. No. 88-17 at 8–9; Laub Decl. ¶¶ 121–27, Dkt. No. 88-31 at 44–49).

With respect to “pits,” Plaintiff submits that the term is used in the patent according to its ordinary meaning in the art, to denote segments of grooves between interruptions. *Id.* at 27. Plaintiff argues that Defendant’s proposed construction improperly limits pits to the header region. *Id.* at 28. According to Plaintiff, the Asserted Patents disclose pits in areas other than the header, such as when used for tracking or address identification. *Id.* (citing ’685 Patent col.7 ll.40–49). Plaintiff further argues that it would be improper to include an “exposed region” limitation as only master disks are made by exposure, and the claims are not limited to master disks. *Id.*

¹¹ Plaintiff cites Bates Number CINE-04784 which does not appear in Exhibit N. Dkt. No. 88-16. The Court understands Plaintiff’s cite to mean CINE-04684, which is page 138 of the reference. *Id.* at 7.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '685 Patent col.1 ll.36–40, col.7 ll.40–49, col.9 ll.31–33, col.11 ll.24–34, fig.19. **Extrinsic evidence:** Laub Decl. ¶¶ 112–16, 121–29, 131–32, 134–36, 139–41, 143–45 (Dkt. No. 88-31 at 42–58); Alan B. Marchant, *Optical Recording: A Technical Overview* (1990) (excerpts) (Plaintiff's Ex. L, Dkt. No. 88-14); G. Bouwhuis et al., *Principles of Optical Disc Systems* (1985) (excerpts) (Plaintiff's Ex. M, Dkt. No. 88-15); Alan Bell, *Optical Data Storage Technology Status and Prospects*, Computer Design Jan. 1983, at 133 (Plaintiff's Ex. N, Dkt. No. 88-16); Masud Mansuripur, *The Physical Principles of Magneto-optical Recording* (1995) (excerpts) (Plaintiff's Ex. O, Dkt. No. 88-17); Stan Gibilisco, *The Illustrated Dictionary of Electronics* (7th ed. 1997), “pit” (Plaintiff's Ex. I, Dkt. No. 88-10); Jim Taylor, *DVD Demystified* (1997), glossary “pit” (Plaintiff's Ex. J-1, Dkt. No. 88-11).

Defendant responds that, at the time of the invention, “grooves” was understood in the art to refer to a feature of a recordable disk meant for tracking and that “groove” does not have any meaning with respect to read-only disks. Dkt. No. 93 at 24, 28. Further, Defendant distinguishes “pits” from “grooves” in that “pits” refer to data on a disk whether the disk is recordable or not. *Id.* at 24. Defendant contends that grooves are distinguishable from pits and interrupted grooves in that grooves are continuous. *Id.* at 25. Further, Defendant responds that grooves were distinguished from pits in the course of prosecuting the '825 Application and that the applicants thereby disavowed any overlap in meaning between “grooves” and “pits.” *Id.* at 26. Defendant also reiterates its position that the surface relief pattern is formed of spiral or concentric tracks, and therefore the grooves are spiral or concentric. *Id.* at 26–27.

With respect to “interrupted grooves,” Defendant responds that the term does not have a widely understood meaning in the art and that it is not defined in the Asserted Patents. *Id.* at 28.

Defendant contends that the term is indefinite as there is no guidance regarding what constitutes an interruption in a groove such that the groove is interrupted. *Id.* In the alternative, Defendant responds that the term should be construed to reflect that the patents are limited to recordable disks, and that with the ordinary meaning of “interrupted,” the “interrupted groove” is the continuous groove with discontinuities. *Id.* at 28–30.

With respect to “pits,” Defendant responds that the Asserted Patents describe “pits” as groove interruptions in the header of the recordable disk. *Id.* at 30–31 (citing ’685 Patent col.7 ll.44–49, col.9 ll.31–33). Defendant argues that because of this description, “pits” should be construed to include a “header” limitation. *Id.*

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** 685 Patent col.1 ll.32–46, col.5 ll.16–20, col.6 ll.33–40, col.6 ll.48–52, col.7 l.36 – col.8 l.7, col.9 ll.26–37, col.9 ll.31–33, col.11 ll.10–23, figs.1–3, 5, 6, 9–11, 13–19; ’825 Application File Wrapper January 4, 2000 Amendment (Defendant’s Ex. 5, Dkt. No. 93-12 at 11–19). **Extrinsic evidence:** Wilkinson Decl. ¶¶ 50, 59, 83, 93–111 (Dkt. No. 93-1 at 17–18, 20, 27, 31–40); Stan Gibilisco, *The Illustrated Dictionary of Electronics* (7th ed. 1997), “groove” (Plaintiff’s Ex. I, Dkt. No. 88-10); *Merriam Webster’s Collegiate Dictionary* (10th ed. 1996), “groove” and “interrupt” (Plaintiff’s Ex. K, Dkt. No. 88-13); Alan B. Marchant, *Optical Recording: A Technical Overview* (1990) (excerpts) (Plaintiff’s Ex. L, Dkt. No. 88-14); G. Bouwhuis et al., *Principles of Optical Disc Systems* (1985) (excerpts) (Plaintiff’s Ex. M, Dkt. No. 88-15); Alan Bell, *Optical Data Storage Technology Status and Prospects*, Computer Design Jan. 1983, at 133–46 (Plaintiff’s Ex. N, Dkt. No. 88-16); Masud Mansuripur, *The Physical Principles of Magneto-optical Recording* (1995) (excerpts) (Plaintiff’s Ex. O, Dkt. No. 88-17); Jordan Isailovic, *Videodisc and Optical Memory Systems* (1985)

(Plaintiff's Ex. V, Dkt. No. 88-24); *The IEEE Standard Dictionary of Electrical and Electronics Terms* (6th ed. 1996), "groove" (Plaintiff's Ex. AA, Dkt. No. 88-29).

Plaintiff replies that "grooves" is defined in the Asserted Patents as the lower regions of the surface relief pattern and is used in the patents to encompass other low regions, namely, pits and interrupted grooves. Dkt. No. 94 at 11–12. Plaintiff further replies that "grooves" is not limited to recordable disks as the patent explicitly describes read-only disks with grooves. *Id.* at 3–4, 12 (citing '685 Patent col.7 ll.36–53). According to Plaintiff, the prosecution history of the '825 Application does not evince a distinction between pits and grooves, but rather focuses on the difference between the inverse mastering of the then-pending claims and the positive mastering of the prior art. *Id.* at 12–13. In fact, Plaintiff contends, the applicants referred to the "pits" of the prior art as "grooves." *Id.* at 13.

With respect to "interrupted grooves," Plaintiff replies that what constitutes an interruption is described in the patents. *Id.* at 14–15 (citing '685 Patent col.9 ll.20–33). Plaintiff further replies that the extrinsic evidence establishes the concept of interruptions in grooves is well understood. *Id.* at 15.

With respect to "pits," Plaintiff replies that these are microscopic depressions in the surface relief pattern. *Id.* at 15. Plaintiff also replies that the pits are explicitly not limited to a master disk, as Defendant's proposed construction suggests. *Id.* at 15–16 (citing '334 Patent Claims 4 and 12 ("wherein the disk is a replica disk")). Further, Plaintiff replies, "pits" are not limited to the header region of the disk. *Id.* at 16. For example, Plaintiff contends that the patents describe that pits may be data on read-only disks. *Id.* (citing '685 Patent col.7 ll.40–44).

Plaintiff cites further intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '685 Patent col.7 ll.36–50; '825 Application File Wrapper (excerpts) (Plaintiff's Ex. F,

Dkt. No. 88-7). **Extrinsic evidence:** Laub Decl. ¶¶ 137, 148 (Dkt. No. 88-31 at 55, 58); Wilkinson Decl. ¶ 97 (Dkt. No. 93-1 at 34–35).

Analysis

There are four main issues in dispute with respect to these terms. The first issue is whether “grooves” is necessarily limited to continuous spiral or concentric regions in recordable disks. The second issue is whether “grooves” encompasses “interrupted grooves” and “pits.” The third issue is whether the meaning of “interrupted grooves” is reasonably certain. The fourth issue is whether “pits” are limited to the grooves in the header area of the master disk. With respect to the first issue, the Court determines that “grooves” are not limited to a spiral or concentric shape and that they are not, by definition, limited to recordable disks. With respect to the second issue, the Court determines that, in the Asserted Patents, “grooves” are distinct from “pits”/“interrupted grooves.” With respect to the third issue, the Court determines that “interrupted grooves” are “pits.” Finally, with respect to the fourth issue, the Court determines that “pits” are not limited to the header area of the master disk.

“Grooves” is defined in the Asserted Patents as regions of the surface relief pattern that are adjacent to and lower than lands. The patents provide that “[t]he generally spiral track forming the desired surface relief pattern as a result of the mastering process can be defined by high regions termed ‘lands’ and lower adjacent regions termed ‘grooves’ and/or pits (i.e., interrupted grooves).” ’685 Patent col.1 ll.36–40. Thus, “grooves” in the patents is used to denote the low regions of the surface relief pattern that are adjacent to the lands and that, with the lands, define tracks.

The “grooves” are not limited to concentric and spiral forms and are not limited to recordable disks. As set forth above, the patents describe that the tracks, and therefore the

grooves, may be spiral or concentric, but the patents do not limit the tracks or grooves to ones that are either spiral or concentric.¹² As also set forth above, the patents are not limited to recordable disks. Further, the patents describe that “grooves” may be features of read-only disks as well as recordable disks.¹³ For instance, Figure 5 depicts a master disk that

may be used as part of a disk replication process (e.g., a disk molding process) for producing various formats of optical data disks. The data features on the optical data disks may include data pits, grooves, bumps or ridges, and land or land areas. This includes current formats of audio CD, CD-ROM and video disk, such as DVD, as well as future formats which use data features described herein.

’685 Patent col.7 ll.36–44. The master disk includes data tracks “which may include features representing data encoded therein.” *Id.* at col.7 ll.50–54. These data tracks “are defined by a series of adjacent master lands 34 and master grooves 36 formed in the data layer 30.” *Id.* at col.7 l.67 – col.8 l.2. Thus, the described master disk which may be used to produce read-only disks includes grooves.

With respect to “the grooves” of Claim 1 of the ’016 Patent, reproduced here, the phrase refers back to “interrupted grooves” recited earlier in the claim. That is, the antecedent basis of “grooves” in this claim is, by implication, “interrupted grooves.” *Energizer Holdings, Inc.*

’016 Patent

1. A replica disk comprising:
a replica substrate including a first major surface and a second major surface, the first major surface including a surface pattern defined by lands and interrupted grooves, wherein the surface pattern defines a track pitch that is less than 425 nanometers,
wherein tops of the lands define widths between 25 percent of the track pitch and 140 nanometers, and
wherein the grooves define depths between 20 and 120 nanometers.

¹² The Court finds that much of the extrinsic evidence of record describes grooves and tracks as spiral or concentric, and the parties have not identified in this evidence any examples of grooves or tracks that are not spiral or concentric, but the parties have also not identified any extrinsic evidence that states that grooves and tracks must be spiral or concentric.

¹³ The Court finds that much of the extrinsic evidence of record describes grooves in the context of recordable disks but the parties have not identified any extrinsic evidence that establishes that grooves exist only in recordable disks. Indeed, the extrinsic evidence suggests the opposite—i.e., that grooves are used in read-only disks. *See, e.g.,* Jordan Isailovic, *Videodisc and Optical Memory Systems*, 6, 56–57 (1985), Dkt. No. 88-24 at 4, 7–8 (describing various read-only disks and noting the advent of a “grooveless” disk in 1980; also describing a videodisc mastering process in which “information elements and grooves can be recorded simultaneously”).

v. Int'l Trade Comm'n, 435 F.3d 1366, 1370 (Fed. Cir. 2006) (holding that “an antecedent basis can be present by implication” and that “anode gel” was the antecedent basis for “said zinc anode”).

The Asserted Patents equate “interrupted grooves” and “pits.” Outside of the claim sets, the term “interrupted grooves” is used only twice in the Asserted Patents. Both times the term is used it is equated with “pits”: “[t]he generally spiral track forming the desired surface relief pattern as a result of the mastering process can be defined by high regions termed ‘lands’ and lower adjacent regions termed ‘grooves’ and/or *pits (i.e., interrupted grooves)*.” *Id.* at col.1 ll.39–40 (emphasis added). “Further, controller 61 may operate to modulate laser beam 72 to expose *pit regions (interrupted grooves)* in the header area of the disk.” *Id.* at col.9 ll.31–33. Thus, “interrupted grooves” are “pits.”

The term “pits,” however, is not defined in the patents. However, the patents do provide that “pits” are not necessarily only in a master disk. Indeed, pits may in part define the surface relief pattern that is transferred to the replica disk. *Id.* at col.1 ll.23–46. Further, the patents do not limit pits to the header of the disk. *See, e.g., id.* at col.7 ll.36–61 (referring to pits on the disk generally without restriction to the header). Finally, the patents use “pits” and “grooves” as distinct features of the surface relief pattern; pits are not a subset of grooves. *See, e.g., id.* at col.1 ll.39–40 (noting that the track may be defined by lands and grooves, lands and pits (i.e., interrupted grooves), or lands, grooves, and pits); col.7 ll.40–41 (noting that data features on a disk “may include data pits, grooves, bumps or ridges, and land or land areas”). The distinction the patent make between pits and grooves is that pits are *interrupted* grooves—i.e., they are not continuous.

Accordingly, the Court construes the terms as follows:

- other than in Claim 1 of the '016 Patent, “grooves” means “continuous regions of a surface relief pattern that are adjacent to and lower than lands”;
- in Claim 1 of the '016 Patent, “the grooves” means “the interrupted grooves”;
- “interrupted grooves” means “discontinuous regions of a surface relief pattern that are adjacent to and lower than lands”;
- “pits” means “discontinuous regions of a surface relief pattern that are adjacent to and lower than lands.”

G. “pit depth”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“pit depth” <ul style="list-style-type: none"> • ’334 Patent Claims 1, 10, 18 	No construction necessary in light of construction of “pit” <p>Alternative:</p> <ul style="list-style-type: none"> • “the depth of a pit” 	Indefinite under 35 U.S.C. § 112, ¶ 2 <p>Alternative:</p> <ul style="list-style-type: none"> • “the physical depth between the lowest point of an individual pit to the substantially flat region of the adjacent land surface”

The Parties’ Positions

Plaintiff submits that this term does not need to be construed apart from the construction of “pit.” Dkt. No. 88 at 30. Plaintiff argues that the fact that Defendant uses both “pit” and “depth” in its proposed construction evinces that “pit depth” is readily understood and therefore not indefinite. *Id.*

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Laub Decl. ¶¶ 161–65 (Dkt. No. 88-31 at 62–63).

Defendant responds that depth is measured relative to a surface and that, therefore, “pit depth” should be construed to indicate the surface from which the depth of the pit is measured.

Dkt. No. 93 at 32. Although Defendant contends that this term is indefinite, it does not provide any argument or evidence in support of that contention. *See id.*; Dkt. No. 95-1 at 4.

In addition to the claims themselves, Defendant cites the following **extrinsic evidence** to support its position: *Merriam Webster's Collegiate Dictionary* (10th ed. 1996), “depth” (Plaintiff’s Ex. K, Dkt. No. 88-13); Alan Bell, *Optical Data Storage Technology Status and Prospects*, Computer Design Jan. 1983, at 133–46 (Plaintiff’s Ex. N, Dkt. No. 88-16); Jordan Isailovic, *Videodisc and Optical Memory Systems* (1985) (Plaintiff’s Ex. V, Dkt. No. 88-24); Heitaro Nakajima and Hiroshi Ogawa, *Compact Disc Technology* (Charles Aschmann trans. 1992) (Plaintiff’s Ex. 10, Dkt. No. 93-17).

Plaintiff replies that the claimed lands do not necessarily have a “substantially flat region” and that it is therefore improper to read such a limitation into the definition of “pit depth.” Dkt. No. 94 at 16.

Analysis

There are two issues in dispute with respect to “pit depth.” First, whether the meaning of the term is so uncertain as to render claims indefinite. Second, whether a pit is necessarily adjacent to a land with a substantially flat region. With respect to the first issue, Defendant has not presented any argument or evidence that “pit depth” renders any claim indefinite and therefore necessarily fails to prove such. With respect to the second issue, “lands” do not necessarily have a substantially flat region, and therefore the pit depth is not necessarily measured relative to that region.

The pit depth is measured with respect to the top of the adjacent lands. The Asserted Patents describe that the depth of a groove is measured with respect to the top of the adjacent lands. *See* ’685 Patent col.8 ll.3–11 (noting that “master groove bottom 42 [] is defined by the

master substrate 32” and “[m]aster grooves 36 have a depth 44 which is equal to the height of master lands 34 relative to master substrate 32”). The patents also describe that a “pit (i.e., interrupted groove),” like a groove, is a region that is lower than the adjacent lands. Therefore, the depth is a measure of how much the pit (or groove) is lower than the adjacent lands.

The land tops are not necessarily flat. For example, Figure 19 of the ’685 Patent depicts a master disk and two replica disks each having rounded or pointed land tops. Similarly, Figures 13 through 18 all depict master disks with rounded or pointed land tops, as does Figure 5 and Figures 9 through 10. Indeed, the groove depth is depicted in Figure 5 as relative to the top of a land with a rounded top. Simply, there is no legitimate reason to require a “substantially flat region of the adjacent land surface.”

Accordingly, the Court holds that Defendant has not proven that “pit depth” renders any claim indefinite, rejects Defendant’s proposed “substantially flat region” limitation, and determines that “pit depth” has its plain and ordinary meaning without the need for further construction.

H. “track pitch”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“track pitch” <ul style="list-style-type: none"> • ’685 Patent Claims 1, 7, 19 • ’016 Patent Claim 1 • ’931 Patent Claims 1, 11 • ’633 Patent Claim 1 • ’334 Patent Claims 1, 10, 18 	“The radial distance between two tracks”	“spacing between two corresponding points on concentrically or spirally adjacent tracks”

The Parties' Positions

Plaintiff submits that “track pitch” is defined in the Asserted Patents as the radial distance between two tracks. Dkt. No. 88 at 31–32 (citing ’685 Patent col.2 ll.53–56). Plaintiff argues that Defendant’s proposed construction injects ambiguity in that it is unclear what “corresponding points” means. *Id.* at 32.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.2 ll.53–56. **Extrinsic evidence:** Laub Decl. ¶¶ 178–80, 182–86 (Dkt. No. 88-31 at 65–69); Stan Gibilisco, *The Illustrated Dictionary of Electronics* (7th ed. 1997), “track pitch” (Plaintiff’s Ex. I, Dkt. No. 88-10); Jim Taylor, *DVD Demystified* (1997), Glossary “track pitch” (Plaintiff’s Ex. J-1, Dkt. No. 88-11).

Defendant responds that “track pitch” should be construed to provide the reference points for the measurement of the distance between the tracks. Dkt. No. 93 at 32–33.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.1 ll.32–36, col.2 ll.53–56. **Extrinsic evidence:** Wilkinson Decl. ¶¶ 112–15 (Dkt. No. 93-1 at 40–41); Stan Gibilisco, *The Illustrated Dictionary of Electronics* (7th ed. 1997), “pitch” (Plaintiff’s Ex. I, Dkt. No. 88-10); Jim Taylor, *DVD Demystified* (1997), Glossary “track pitch” (Plaintiff’s Ex. J-1, Dkt. No. 88-11); Alan B. Marchant, *Optical Recording: A Technical Overview* (1990) (excerpts), Terms and Acronyms “pitch” (Plaintiff’s Ex. L, Dkt. No. 88-14); Masud Mansuripur, *The Physical Principles of Magneto-optical Recording* (1995) (excerpts) (Plaintiff’s Ex. O, Dkt. No. 88-17).

Plaintiff replies to reiterate that the meaning of “corresponding points” is not clear. Dkt. No. 94 at 16.

Analysis

The dispute here involves two issues. The first issue concerns what the reference points are for measuring the track spacing. The second issue is whether tracks are necessarily concentric or spiral. With respect to the first issue, the Court understands that track pitch is the distance from a point on a track to a similar point on an adjacent track (e.g., from track center to track center). With respect to the second issue, as set forth above, tracks may be, but are not necessarily, concentric or spiral.

To begin, the Asserted Patents explain that “track pitch” is the spacing, or distance, between tracks. For instance, the patents provide that “during the mastering exposure step, the mastering system synchronizes the translation position of a finely focused optical spot with the rotation of the master substrate to describe a generally concentric or spiral pattern of a desired track spacing or ‘track pitch’ on the disk.” ’685 Patent col.1 ll.32–36. Similarly, the patents provide that “[h]igher density data storage disks often require the storage of a greater amount of information within the same or smaller size of disk area, resulting in smaller track pitch (i.e., distance between tracks) design criteria.” *Id.* at col.2 ll.53–56. Thus, “track pitch” is the distance between adjacent tracks.

The Court finds that “track pitch” is used in the art to denote the distance between like points on adjacent tracks. For example, one reference explains that “track-pitch is the center-to-center distance between neighboring tracks.” Masud Mansuripur, *The Physical Principles of Magneto-optical Recording* 6 (1995), Dkt. No. 88-17 at 4. Another reference similarly defines “track pitch” as the “distance (in the radial direction) between the centers of two adjacent tracks on a disc.” Jim Taylor, *DVD Demystified* 426 (1997), Dkt. No. 88-11 at 6. Yet another reference defines “pitch” as “the spacing between the center-lines of adjacent tracks.” Alan B. Marchant,

Optical Recording: A Technical Overview 1243 (1990), Dkt. No. 88-14 at 13; *see also* Stan Gibilisco, *The Illustrated Dictionary of Electronics* 525 (7th ed. 1997), Dkt. No. 88-10 at 7 (defining “pitch” in an analogous use as “[t]he distance between the peaks of adjacent grooves on a phonograph disc”). The Court understands Defendant’s proposed “spacing between two corresponding points” in this vein, but determines the concept is more accurately stated as “distance between the centers.”

As set forth above, while tracks may be spiral or concentric, they need not be. Thus, the Court rejects Defendant’s proposal to read such a limitation into “track pitch.” Similarly, the Court rejects Plaintiff’s “radial” limitation. While the track pitch is the radial distance when the tracks are spiral or concentric about the center of the disk, the radial limitation may not be appropriate for other track configurations.

Accordingly, the Court construes “track pitch” as follows:

- “track pitch” means “distance between the centers of two adjacent tracks.”

I. “wherein the tops of the lands are substantially flat and coplanar”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“wherein the tops of the lands are substantially flat and coplanar” <ul style="list-style-type: none"> • ’016 Patent Claim 8 	No construction necessary in light of the construction of “tops of the lands”	Indefinite under 35 U.S.C. § 112, ¶ 2 Alternative: <ul style="list-style-type: none"> • “land tops that are substantially level with each other at the same elevation relative to the opposite side of the replica disk substrate”

The Parties’ Positions

Plaintiff submits that the words of this term are common and need no definition other than, potentially, “coplanar.” Dkt. No. 88 at 33. With respect to “coplanar,” Plaintiff submits that

it means “lying or acting in the same plane.” *Id.* at 33 (citing *Merriam Webster’s Collegiate Dictionary* 256 (10th ed. 1996), Dkt. No. 88-13 at 6). Plaintiff further submits that the term “substantially” has been found by the Court to be definite. *Id.* (citing *Advanced Neuromodulation Sys. v. Advanced Bionics Corp.*, No. 4:04-cv-131, 2005 U.S. Dist. LEXIS 47694, at *27 (E.D. Tex. Sep. 29, 2005) ¹⁴ (construing “substantially” as “to a considerable extent”)).

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Laub Decl. ¶¶ 197–99 (Dkt. No. 88-31 at 71); *Merriam Webster’s Collegiate Dictionary* (10th ed. 1996), “coplanar” (Plaintiff’s Ex. K, Dkt. No. 88-13).

Defendant responds that the word “substantially” renders the term indefinite as “substantially” is a term of degree and the Asserted Patents do not provide any guidance for measuring that degree. Dkt. No. 93 at 33–34. Defendant further responds that it is unclear whether “substantially” modifies both “flat” and “coplanar” or only “flat.” *Id.* at 34. In the alternative, Defendant responds that the Asserted Patents describe that the land tops are at the same elevation level with respect to the opposite side of the replica disk substrate and that they are largely but wholly level with each other. Defendant contends that *Advanced Neuromodulation* is distinguishable because the patent in that case included the word “substantially” in the description, whereas the word appears in the Asserted Patents solely in the claims. *Id.* (citing U.S. Patent No. 6,216,045, Dkt. No. 93-18).

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent fig.19. **Extrinsic evidence:** *Merriam Webster’s Collegiate Dictionary* (10th ed. 1996), “coplanar” and “flat” (Plaintiff’s Ex. K, Dkt. No. 88-13); U.S. Patent No. 6,216,045 (Defendant’s Ex. 11, Dkt. No. 93-18).

¹⁴ A PACER version of the opinion has been submitted as Plaintiff’s Exhibit P, Dkt. No. 88-18.

Plaintiff replies that Defendant has failed to provide any evidence that one of ordinary skill in the art would not understand the bounds of the term and that, therefore, the term does not render any claim indefinite. Dkt. No. 94 at 17.

Analysis

There are two issues raised by the dispute over the term. The first issue is whether the term is an uninformed term of degree that renders claims indefinite. The second issue is whether “coplanar” means that the land tops are at the same height relative to the opposite side of the disk. With respect to the first issue, the patents provide sufficient guidance for understanding the degree of flatness and coplanarity in that they describe the technological purpose for having flat and coplanar land tops—for use in flying head applications. With respect to the second issue, the Court understands that the reference point for coplanar land-top heights is the surface of the replica disk opposite the surface with the relief pattern.

In the context of the Asserted Patents, the meaning of “substantially flat and coplanar” is reasonably certain. Terms of degree are not indefinite if the patent provides some objective standard for measuring the degree. *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015). Here, “substantially” is a term of degree, and the Asserted Patents provide a standard for measuring that degree. For example, the patents explain that in an embodiment, the replica-disk land tops are level and extend to the same height relative to the opposite surface of disk “to the precision of the flatness of the master disk substrate” which is “important to flying head media applications”:

In another embodiment, the present invention provides a disk including a replica substrate having a first major surface and a second surface. The first major surface includes a surface relief pattern in the form of a track pattern defined by adjacent lands and grooves. . . .

In one preferred embodiment, the land tops are level with each other to the precision of the flatness of the master disk substrate. The land tops are level and at

the same elevation relative to the second major surface. This is important in flying head media applications, such as near field recording techniques, where small lenses fly in proximity to the replica disk surface.

'685 Patent col.5 l.61 – col.6 l.16. The patents similarly describe an embodiment:

The replica disk land tops are very smooth, due to the groove bottoms 42 which are defined by the master substrate 32, which is preferably optically polished glass. The smoothness of the land tops is defined by the substrate interface between the master substrate 32 and the layer of photosensitive material 30. Smoothness of land tops results in a reduction of noise in subsequent readout of data from the disk.

Further, the wide, flat lands are level with each other, due to the groove bottoms 42 being defined by the master substrate 32. The flat lands are level with each other and at the same elevation, enhancing the flyability of the disk substrate for flying head applications.

Id. at col.8 ll.48–60. The degree to which the land tops are level and coplanar is defined by the described purpose of the level and coplanar limitations—for use in flying head applications. In this context, “substantially” modifies both “level” and “coplanar.” Thus, the tops of the lands are substantially flat and coplanar if the degrees of flatness and coplanarity are suitable for flying head applications.

In the coplanar embodiments, land tops are described as being at the same elevation—that is, they collectively define a planar surface. More specifically, the patents describe that the elevation is relative to a “second major surface.” The Court understands the “second major surface” is the surface of the replica disk opposite the surface with the stamped surface relief pattern.

Accordingly, the Court holds that Defendant has not proven that this term renders any claim indefinite and construes it as follows:

- “wherein the tops of the lands are substantially flat and coplanar” means “wherein the tops of the lands are substantially flat and are at substantially the same elevation relative to the second major surface.”

J. “generally flat and coplanar”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“generally flat and coplanar” <ul style="list-style-type: none">• ’685 Patent Claim 2	No construction necessary (plain language)	Indefinite under 35 U.S.C. § 112, ¶ 2

The Parties’ Positions

Plaintiff submits that the Court has previously indicated that the word “generally” is not indefinite. Dkt. No. 88 at 34 (citing *Lo v. Microsoft Corp.*, No. 2:07-cv-322, slip op. at 8–24 (E.D. Tex. June 11, 2009) ¹⁵ (including “generally” in the Court’s claim constructions)).

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Laub Decl. ¶¶ 203–08 (Dkt. No. 88-31 at 72–73).

Defendant responds that “generally” is a term of degree and that the Asserted Patents do not provide adequate guidance to measure that degree. Dkt. No. 93 at 35. Defendant further responds that it is unclear whether “generally” modifies both “flat” and “coplanar” or only “flat.” *Id.*

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’685 Patent col.2 l.50 – col.3 l.7. **Extrinsic evidence:** Laub Decl. ¶ 136 (Dkt. No. 83-11 at 55).

Plaintiff replies that Defendant has failed to provide any evidence that one of ordinary skill in the art would not understand the bounds of the term and that, therefore, the term does not render any claim indefinite. Dkt. No. 94 at 17.

¹⁵ A PACER version of the opinion has been submitted as Plaintiff’s Exhibit Q, Dkt. No. 88-19.

Analysis

The issue here is whether the meaning of the term is reasonably certain. The Court understands the broader term “wherein the land tops are generally flat and coplanar” of Claim 2 of the ’685 Patent has scope identical to “wherein the land tops are substantially flat and coplanar” of Claim 8 of the ’016 Patent.¹⁶ For the reasons expressed above, the Court determines that the meaning of this term is reasonably certain.

Accordingly, the Court holds that Defendant has not proven that this term renders any claim indefinite and construes it as follows:

- “generally flat and coplanar” means “substantially flat and are at substantially the same elevation relative to the second major surface.”

K. “less than approximately”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“less than approximately” <ul style="list-style-type: none">• ’685 Patent Claims 19, 29	No construction necessary (plain language)	Indefinite under 35 U.S.C. § 112, ¶ 2

The Parties’ Positions

Plaintiff submits that courts, including the Federal Circuit, have held that the word “approximately” is not indefinite. Dkt. No. 88 at 34 (citing *PacTool Int’l, Inc. v. Kett Tool Co.*, No. C06-5367BHS, 2011 U.S. Dist. LEXIS 124705, at *22–23 (W.D. Wash. Oct. 27, 2011))¹⁷ (holding that “approximately” is not indefinite); *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Labs., Ltd.*, 476 F.3d 1321, 1326–28 (Fed. Cir. 2007) (construing “about” as “approximately”).

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Laub Decl. ¶¶ 203–08 (Dkt. No. 88-31 at 72–73).

¹⁶ The Court is not stating that the claims are coextensive.

¹⁷ A PACER version of the opinion has been submitted as Plaintiff’s Exhibit R, Dkt. No. 88-20.

Defendant responds that both “less than” and “approximately” are terms of degree and the Asserted Patents fail to provide adequate guidance for measuring the degree. Dkt. No. 93 at 35.

In addition to the claims themselves, Defendant cites the following **extrinsic evidence** to support its position: Wilkinson Decl. ¶ 118 (Dkt. No. 93-1 at 41).

Plaintiff replies that courts have held that “approximately” does not render a claim indefinite and that its expert explained that one of skill in the art would understand the scope of the claims with “approximately.” Dkt. No. 94 at 17.

Analysis

The issue here is whether the variance in the recited dimensions allowed by the approximate nature of the dimensions is reasonably certain. “Approximately,” as used to modify the recited dimensions, does not render any claim indefinite.

The term “approximately” is not inherently definite or indefinite. As the Supreme Court recently reiterated, “the definiteness requirement must take into account the inherent limitations of language.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2128 (2014). Thus, words like “approximate” and “about” may appropriately be used to “avoid[] a strict numerical boundary to the specified parameter.” *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Labs., Ltd.*, 476 F.3d 1321, 1326 (Fed. Cir. 2007) (quoting *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1217 (Fed. Cir. 1995)). When such a word of approximation is used, the parameter’s “range must be interpreted in its technological and stylistic context.” *Id.* Thus, the range “depends upon the technological facts of the particular case.” *Id.* However, when “nothing in the specification, prosecution history, or prior art provides any indication as to what range . . . is

covered,” the claim is indefinite. *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1218 (Fed. Cir. 1991).

Here, “approximately” is used to avoid strict numerical boundaries on geometric characteristics of the surface relief pattern, namely, track pitch, groove depth, and land width. For example, Claim 19 of the ’685 Patent recites “track pitch less than approximately 700 nanometers,” and Claim 20 recites “wherein the track pitch is less than approximately 425 nanometers.”

The Court finds that “approximately” is used here to denote a range of the specific surface-pattern parameter for which the claimed disk is not appreciably technologically different with respect to parameters in that range—it is not indefinite. The Asserted Patents provide that track pitch, groove depth, and land width are all related to the data density of the disk. *See, e.g.*, ’685 Patent col.2 l.50 – col.3 ll.33 (noting that the prior-art relationship between track width and groove depth limited the density of disks). Wide lands allow for user-recorded data, deep grooves improve tracking, and decreasing track pitch increases the density of the tracks. *Id.* Thus, for example, a track width is approximately 700 nanometers when the technological impact of the actual width is not appreciably different from what it would be if it was exactly 700 nanometers—that is, the disk is technologically equivalent to one having a width of exactly 700 nanometers. *See Ortho-McNeil*, 66 F.3d at 1326–28 (considering the technological effect of varying a parameter recited as “about 1.5” and holding the claims definite).

Accordingly, the Court holds that Defendant has failed to prove any claim is rendered indefinite by use of “approximately” and that the term has its plain and ordinary meaning.

VI. CONCLUSION

The Court adopts the constructions set forth above, as summarized in the following table. The parties are **ORDERED** that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are **ORDERED** to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.


Within thirty (30) days of the issuance of this Memorandum Opinion and Order, the parties are hereby **ORDERED**, in good faith, to mediate this case with the mediator agreed upon by the parties. As a part of such mediation, each party shall appear by counsel and by at least one corporate officer possessing sufficient authority and control to unilaterally make binding decisions for the corporation adequate to address any good faith offer or counteroffer of settlement that might arise during such mediation. Failure to do so shall be deemed by the Court as a failure to mediate in good faith and may subject that party to such sanctions as the Court deems appropriate.

Term	Construction
"wherein the lands have a land width"	No construction necessary.
"groove bottoms"	"lowest region of the grooves"
"tracks"	"a series of adjacent lands and grooves or pits forming a desired surface relief pattern"
"radially adjacent lands"	"two lands separated by a groove or pit in the radial direction"
"A replica disk made from a replication process that includes creation of a master disk, creation of a first-generation stamper from the master disk and creation of a second-generation stamper from the first generation"	"A replica disk made from a replication process that includes—but is not limited to—creation of a master disk, creation of a first-generation stamper from the master disk and creation of a second-generation stamper from

Term	Construction
stamper”	the first generation stamper”
“master disk”	“disk carrying the original surface relief pattern to be positively or inversely replicated”
“surface relief pattern”	plain and ordinary meaning
“surface pattern”	
“lands”	“high regions of the surface relief pattern”
“land tops”	plain and ordinary meaning, subject to the construction of “lands”
“wherein the lands have tops”	
“tops of the lands”	
“grooves”	<p>’016 Patent Claim 1: “the grooves” means “the interrupted grooves”</p> <p>other claims: “continuous regions of a surface relief pattern that are adjacent to and lower than lands”</p>
“interrupted grooves”	“discontinuous regions of a surface relief pattern that are adjacent to and lower than lands”
“pits”	“discontinuous regions of a surface relief pattern that are adjacent to and lower than lands”
“pit depth”	plain and ordinary meaning
“track pitch”	“distance between the centers of two adjacent tracks”
“wherein the tops of the lands are substantially flat and coplanar”	“wherein the tops of the lands are substantially flat and are at substantially the same elevation relative to the second major surface”
“generally flat and coplanar”	“substantially flat and are at substantially the same elevation relative to the second major surface”

Term	Construction
"less than approximately"	plain and ordinary meaning

So ORDERED and SIGNED this 12th day of July, 2016.



RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE